

Claims

What is claimed is:

1. A method for processing a trigger associated with a subject table in a relational
5 database, wherein the trigger defines a triggering statement and one or more triggered actions, the method including:

determining that a triggering statement of a trigger will execute on a subject table row of a
subject table;

requesting a transition table in response to determining that the triggering statement will
10 execute, the transition table including a transition table row, wherein the transition table row comprises
a first value associated with the subject table row and a second value associated with the subject table
row;

reading the transition table row from the transition table;

identifying a processing unit to receive the transition table row and a triggered action of the
15 trigger; and

transmitting the transition table row and the triggered action to the identified processing unit to
be processed.

2. The method of Claim 1, wherein the triggering statement comprises one of an
20 UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

3. The method of Claim 1, wherein the triggered action comprises a first triggered action
of the trigger and a second triggered action of the trigger, and transmitting the transition table row
comprises transmitting the transition table row, the first triggered action, and the second triggered
25 action to the processing unit to be processed.

4. A method for processing a trigger associated with a subject table in a relational database, wherein the trigger defines a triggering statement and one or more triggered actions, the method including:

determining that a triggering statement of a trigger will execute on a subject table row of a
5 subject table;

instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises a first value associated with the subject table row and a second value associated with the subject table row;

10 transmitting a triggered action of the trigger to the second processing unit to be processed using the transition table row.

5. The method of Claim 4, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

15 6. The method of Claim 4, further comprising:

instructing the first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a second transition table row to a third processing unit, wherein the transition table row comprises a first value associated with the subject table row and a
20 second value associated with the subject table row; and

transmitting a second triggered action of the trigger to the third processing unit to be processed using the second transition table row.

7. A method for processing a trigger associated with a subject table in a database comprising:

receiving a triggering statement of a trigger to be executed on a subject table row of a subject
5 table and information identifying a processing unit;

generating a transition table row in response to receiving the triggering statement, wherein the transition table row comprises a first value associated with the subject table row and a second value associated with the subject table row;

transmitting the transition table row to the processing unit.

10

8. The method of Claim 7, wherein generating a transition table row comprises:

determining the original value of the subject table row;

applying the triggering statement to the subject table row;

determining the new value of the subject table row; and

15 generating a transition table row, wherein the transition table row comprises the original value and the new value.

9. A method for processing a trigger associated with a subject table in a database comprising:

receiving a transition table row, wherein the transition table row comprises a first value
5 associated with a subject table row and a second value associated with a subject table row;
storing the transition table row in a memory;
receiving a triggered action of a trigger associated with a subject table and information
identifying the transition table row;
reading the transition table row from the memory based on the information identifying the
10 transition table row; and
processing the triggered action based on the transition table row.

10. The method of Claim 9, wherein processing the triggered action comprises:
determining whether the transition table row satisfies a trigger condition of the trigger; and
15 processing the triggered action if the transition table row satisfies the trigger condition.

11. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

5 determine that a triggering statement of a trigger will execute on a subject table row of a subject table;

 request a transition table in response to determining that the triggering statement will execute, the transition table including a transition table row, the transition table row comprising a first value associated with the subject table row and a second value associated with the subject table row.

10 read the transition table row from the transition table;

 identify a processing unit to receive the transition table row and a triggered action of the trigger; and

 transmit the transition table row and the triggered action to the identified processing unit to be processed.

15

12. The computer program of claim 11, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

20 13. The computer program of Claim 11, wherein the triggered action comprises a first triggered action of the trigger and a second triggered action of the trigger, and wherein the program causes the computer to transmit the transition table row by transmitting the transition table row, the first triggered action, and the second triggered action to the processing unit to be processed.

14. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

5 determine that a triggering statement of a trigger will execute on a subject table row of a subject table;

 instruct a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises a first value associated with the subject table row and a second value
10 associated with the subject table row;

 transmit a triggered action of the trigger to the second processing unit to be processed using the transition table row.

15 15. The computer program of Claim 14, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

16. The computer program of Claim 14, further including executable instructions that cause a computer to

20 instruct the first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a second transition table row to a third processing unit, wherein the transition table row comprises a first value associated with the subject table row and a second value associated with the subject table row; and

 transmit a second triggered action of the trigger to the third processing unit to be processed
25 using the second transition table row.

17. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

- 5 receive a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit;
- generate a transition table row in response to receiving the triggering statement, wherein the transition table row comprises a first value associated with the subject table row and a second value associated with the subject table row;
- 10 transmit the transition table row to the processing unit.

18. The computer program of Claim 17, wherein the executable instructions cause the computer to generate the transition table row by:

- determining the original value of the subject table row;
- 15 applying the triggering statement to the subject table row;
- determining the new value of the subject table row; and
- generating a transition table row, wherein the transition table row comprises the original value and the new value.

19. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

- 5 receive a transition table row, wherein the transition table row comprises a first value associated with a subject table row and a second value associated with a subject table row;
 store the transition table row in a memory;
 receive a triggered action of a trigger associated with a subject table and information identifying the transition table row;
- 10 read the transition table row from the memory based on the information identifying the transition table row; and
 process the triggered action based on the transition table row.

20. The method of Claim 9, wherein the executable instructions cause the computer to
- 15 process the triggered action by:
 - determining whether the transition table row satisfies a trigger condition of the trigger; and
 - processing the triggered action if the transition table row satisfies the trigger condition.

21. A database system including:

a massively parallel processing system including:

one or more nodes;

a plurality of CPUs, each of the one or more nodes providing access to one or more

5 CPUs;

a plurality of data storage facilities each of the one or more CPUs providing access to one or more data storage facilities; and

a process for processing a trigger associated with a subject table in a relational database residing on the one or more data storage facilities, wherein the trigger defines a triggering statement and one or more triggered actions, the process including:

determining that a triggering statement of a trigger will execute on a subject table row of a subject table;

requesting a transition table in response to determining that the triggering statement will execute, the transition table including a transition table row, wherein the transition table row comprises a first value associated with the subject table row and a second value associated with the subject table row;

reading the transition table row from the transition table;

identifying a processing unit to receive the transition table row and a triggered action of the trigger; and

transmitting the transition table row and the triggered action to the identified processing unit to be processed.

22. The database system of Claim 21, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

23. The database system of Claim 21, wherein the triggered action comprises a first triggered action and a second triggered action of the trigger, and transmitting the transition table row comprises transmitting the transition table row, the first triggered action, and the second triggered action to the processing unit to be processed.